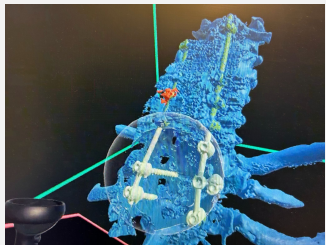


Virtual reality for pre-procedural planning of chronic pain procedures: a case series

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CASE 1



67M with 8/10 axial neck pain



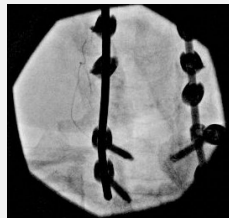
Previous C2-C7 posterior fusion
Failed medications, ESIs, MBBs, prior PNS



C6/7 medial branch PNS
VR used to identify deployment path



>50% relief intraop and 1 month postoperatively → lead migration and removal



CASE 2



72M with 10/10 anorectal pain with sitting; no pain with DRE



x4 lumbar surgeries
Multiple L THA and revisions with acetabular screw removal



L pudendal nerve block
VR used to identify pain generator: screw previously contacting Alcock's canal, and path to block placement in absence of ischial spine



10% pain improvement
Vast functional improvement: able to sit to drive + use public transport



INTRODUCTION

- Deploying peripheral nerve stimulators and intrathecal pumps can be challenging or deemed dangerous in anatomically complex patients with mass-occupying lesions such as cancer or surgical hardware.
- Virtual reality (VR) has been utilized by other specialties, including cardiothoracic and neurosurgery, as a tool for preprocedural planning in patients with atypical anatomy.
- VR offers an immersive, interactive, and collaborative environment for proceduralists to study, manipulate, and draw over patient-specific anatomy in three dimensions.



DISCUSSION

- Benefits of studying imaging in VR include:
 - Enhanced three-dimensional understanding of mass-occupying lesions, measurements, and distances
 - The ability to draw in 3D for collaborative preprocedural planning
- Limitations of VR include:
 - Operator comfort with software and anatomy
 - Unclear benefit in the pain population in procedural time, success rates compared to traditional preprocedural study of imaging
 - Inability to apply VR live during procedure

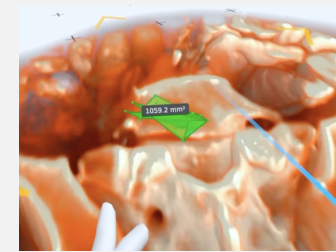
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CASE 3



67M with 10/10 radicular low back pain, intolerant of opioid side effects



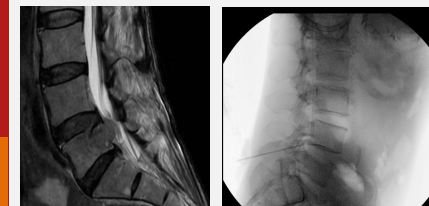
Gastric adenocarcinoma
Mets to L5 vertebral body, posterior elements + neuraxis



Intrathecal pump placement
VR used to confirm safety of approach at L4/5



Weaned off fentanyl patch
Discharged to nursing home with adequate pain control



CASE 4



31 transmasculine, 10/10 sacral pain and radicular R > L leg pain



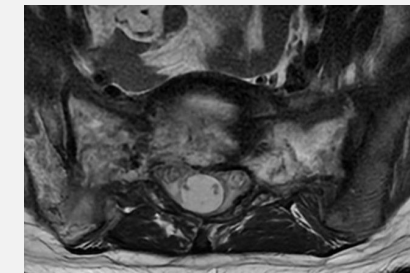
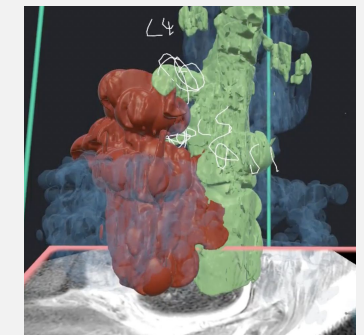
DLBCL with sacral destruction, canal stenosis, bilateral S1 root compression, on 80mg/day oxycodone



R sciatic nerve block x2 → sciatic nerve PNS (popliteal)
VR identified L5 nerve root as major contributor to pain



No significant relief with PNS → consider higher sciatic PNS vs SCS



Question/Comments? Please contact:
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